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KANSAS DEPARTMENT OF HEALTH & ENVIRONMENT

PROCEDURE FOR THE PRESSURE MECHANICAL INTEGRITY TEST FOR EVALUATING INTERNAL MECHANICAL INTEGRITY OF A CLASS V DRINKING WATER TREATMENT RESIDUAL DISPOSAL WELL

Procedure #: UICV-4

Narrative:

The purpose of this test is to evaluate the internal mechanical integrity of the well. A well has internal mechanical integrity if there is no significant leak in the casing, tubing, or packer. Internal mechanical integrity is checked by conducting a hydraulic pressure test of the casing/tubing annulus and monitoring for a pressure loss. The test shall be witnessed by a representative of the KDHE, therefore the schedule for the test shall be mutually agreed upon.

A plan for this test shall be submitted to KDHE for review and approval prior to conducting the test. The plan shall include a prognosis and schedule for conducting the test. Include a diagram of the surface and subsurface well completion. The plan shall include a waste handling contingency plan to cope with the shut-in of the well that will be required should the well fail the test. Plan approval shall be obtained from KDHE before commencing the test. K.A.R. 28-46-33 establishes mechanical integrity requirements.

Procedure:

1. The test shall be a hydraulic test. The liquid pressure of the annulus is to be monitored for the purpose of determining integrity. It shall be demonstrated to the KDHE representative that the annulus is liquid filled. This can be demonstrated to the KDHE representative upon completion of the test.
2. The well must be in thermal equilibrium before commencing the test.
3. Once the annulus has been pressurized vent as much air as is feasible from the annulus. Repressure as necessary.
4. Once the annulus has been pressurized for the test the annulus shall be isolated from all external artificial sources capable of introducing pressure to the annulus.
5. The well shall be static during the test.
6. There shall be a demonstration by appropriate calculations or other information that the annulus hydrostatic pressure exceeds the tubing hydrostatic pressure and the formation pressure at all depths during the test.
7. The minimum surface annulus test pressure shall be 150 psi. Local geology, hydrology, or well design may necessitate the use of a higher test pressure.

8. A description of the pressure gauge to be used to monitor the test pressure must be provided. The gauge must have a scale such that the test pressure is 40-60% of full scale. The scale shall measure pressure in increments of no more than 2 psi per division. The gauge shall be tested for accuracy for the mechanical integrity test. A document with a description of the test, the test date, amount of error found on the gauge during the test and a description of corrective action such as recalibration shall be provided to the KDHE representative at the time of the mechanical integrity test. It shall be demonstrated that the gauge is functioning properly.
9. The test shall be a minimum one (1) hour in duration.
10. A pressure loss equal to or less than 5% of the initial test pressure is a satisfactory test and indicates the well has internal mechanical integrity at the time of the test. A pressure increase greater than 5% of the initial test pressure is not acceptable and may indicate the well has not reached thermal equilibrium.
11. The test shall be witnessed by a representative of KDHE. The test is valid only when witnessed by a representative of KDHE.
12. If a satisfactory test is not obtained the well shall remain out of service until corrective action has been taken and a satisfactory mechanical test conducted. The location of the leakage must be determined and the impact to the environment evaluated. An environmental remediation plan and/or a repair plan for the well may be required to be submitted to KDHE for review and approval. No work shall commence until plan approval has been obtained from KDHE.

Failure to follow the KDHE approved MIT plan may result in cancellation of the test and shut-in of the well until the MIT is rescheduled and conducted to the satisfaction of KDHE.